CHAPTER 6 HIGHWAY BRIDGE REPLACEMENT AND REHABILITATION (HBRR)

CONTENTS

EXHIBITS

CHAPTER 6 HIGHWAY BRIDGE REPLACEMENT AND REHABILITATION (HBRR)

6.1 INTRODUCTION

Excerpt from: Publication No. FHWA-PD-92-018:

Section 204 of the 1970 Federal-aid Highway Act (Public Law 91-605) established a "Special Bridge Replacement Program" which was codified in Section 144 of Title 23 of the United States Code (USC). Projects under this program had to be on a Federal-aid highway system.

Section 124 of the Surface Transportation Assistance Act of 1978 (1978 STAA, Public Law 95-599) retitled and amended Section 144 of Title 23 USC to provide a "Highway Bridge Replacement and Rehabilitation(HBRR) Program" that was applicable to bridges both on and off the Federal-aid highway system (on and off system bridges).

It was stipulated that not less than 15 percent of the State's apportionments for FY's 1979-1982, nor more than 35 percent were to be spent off-system. The optional 20 percent of these funds, the portion between 15-35 percent, could be spent either for on-system or off-system bridge replacement or rehabilitation.

The Surface Transportation Assistance Act of 1982 (1982 STAA, Public Law 97-424) continued the Highway Bridge Replacement and Rehabilitation Program with the same 15-20-65 percent spending requirements and provided authorizations through FY 1986.

The Surface Transportation and Uniform Relocation Assistance Act of 1987 (1987 STURAA, Public Law 100-17):

- provided authorizations of $1.63 billion per fiscal year nationwide for each of FY's 1987-1991
- continued the 15-20-65 percent spending requirements
- allowed States, beginning with the FY 1987 apportionments, to use bridge funds to replace ferryboat operations in existence on 1/1/84, to replace bridges destroyed prior to 1965, for low-water crossings, and for bridges made obsolete by Corps of Engineers (COE) flood-control or channelization projects and not rebuilt with COE funds
- permitted States to carry out bridge improvement projects on non-controversial off-system bridges eligible for Highway Bridge Replacement and Rehabilitation funding, and to apply 80 percent of the cost of such projects expended after 4/2/87 as a credit for the non-Federal share of other Highway Bridge Replacement and Rehabilitation projects carried out by the state
- made the availability period for apportioned bridge funds the same as for primary funds with lapsed funds to be reapportioned to the other States

The Intermodal Surface Transportation Efficiency Act of 1991 (1991 ISTEA, Public Law 102-240) continues the Highway Bridge Replacement and Rehabilitation Program. The formula and requirements of the program are basically unchanged from previous years.

Section 1003 of the 1991 ISTEA authorizes $16.1 billion to be appropriated nationwide out of the Highway Trust Fund over a six-year period for the Highway Bridge Replacement and Rehabilitation Program ($2.3 billion for FY 1992 and almost $2.8 billion for each of F''s 1993-1997).

ISTEA contains the following provisions:

- not less than 15 percent of a State's apportionment, nor more than 35 percent, is to be spent on bridges off of Federal-aid highways (i.e., bridges on local roads and rural minor collectors). The remaining 65 percent, up to a maximum of 85 percent, of the apportionment is to be spent for bridges on Federal-aid highways.

- Title 23 is revised to allow Federal participation in bridge painting, seismic retrofitting, and calcium magnesium acetate applications (Section 1028(b)).

- the Discretionary Bridge program is continued at a substantially lower funding level, and with a new timber bridge component (Sections 1028(d) & 1039). For information on the Discretionary Bridge Program refer to Chapter 12 "Other Federal Programs" in this manual

- Up to 50 percent of a State's Highway Bridge Replacement and Rehabilitation Program apportionment (i.e., mandatory 65 percent and optional 20 percent funds) may be transferred to the National Highway System (NHS) or the Surface Transportation Program (STP). Transferred amounts are not subject to the STP set-asides and sub-state distribution requirements (Section 1028(g)).

- New requirements are established concerning Indian Reservation bridges. Each fiscal year, not less than one percent of the amount apportioned to each State which has an Indian Reservation within its boundaries must be transferred to the Secretary of the Interior. These funds are to be expended to replace, rehabilitate, paint, or apply calcium magnesium acetate to deficient highway bridges located on Indian Reservation roads (Section 1028(f)).

These procedures were prepared by the Local Assistance Branch of the Office of Structures (SLA) and Office of Local Programs (OLP), and in consultation with the HBRR Advisory Committee, to guide local agencies in their selection of bridges to be funded from the program. Recommended changes to these procedures should be addressed to OLP - HBRR Program Manager.

6.2 PROJECT ELIGIBILITY

ELIGIBLE BRIDGE LIST (EBL)

As required by Section 650.407 of Title 23 of the Code of Federal Regulations, Caltrans maintains an inventory of all bridges under the jurisdiction of the Federal, State and local governments. Inventory data for each bridge is provided to Caltrans on Structure Inventory and Appraisal sheets (Exhibit 6-A) which are filled out in accordance with the "Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges" (FHWA Report No. FHWA-ED-89-044). Based on the information provided in the Structure Inventory and Appraisal sheet, each bridge is assigned a Sufficiency Rating using the AASHTO Sufficiency Rating formula found in the Coding Guide. The Sufficiency Rating is used as a basis for establishing eligibility for replacement or rehabilitation of bridges.

In order to become eligible for Highway Bridge Replacement and Rehabilitation funding the FHWA requires, as a minimum, that a bridge be either structurally deficient or functionally obsolete. An explanation of how a bridge is determined to be either structurally deficient or functionally obsolete is found in the FHWA manual *Recording and Coding Guide for Structure Inventory and Appraisal of the Nation's Bridges*. Those structurally deficient or functionally obsolete bridges which have a calculated Sufficiency Rating of less than 50 are published in the EBL as replacement candidates. Those structurally deficient or functionally obsolete bridges which have a calculated Sufficiency Rating (SR) between 50 and 80 are published in the EBL as rehabilitation candidates.

Local Agency EBL is available on the Internet at:
http://www.dot.ca.gov/hq/structur/strmaint/

BRIDGE DEFICIENCY RATING (BDR)

The Bridge Deficiency Rating factor is used by Caltrans to prioritize bridges on the Eligible Bridge List. The deficiency rating is calculated from data provided in the Structure Inventory and Appraisal sheet and input into Caltrans' Structures Maintenance Data Base. The formula for calculating the Bridge Deficiency Rating factor is similar to the Federal Sufficiency Rating formula except that the Adjusted Operating Tonnage is used instead of the Adjusted Inventory Tonnage, all internal maximum factor limits are eliminated, and higher values are given for high ADT routes.

6.3 PROJECT TYPES

Seven types of projects are eligible for funding under the Highway Bridge Replacement and Rehabilitation Program.

Of those project types listed, only bridge replacement, bridge rehabilitation, and low water crossing candidates are directly funded with Highway Bridge Replacement and Rehabilitation funds. Furthermore, only Bridge Replacement and Bridge Rehabilitation candidates are required to appear on the Eligible Bridge List. Since the majority of candidates for the Painting, Rail Replacement and Voluntary Seismic Retrofit programs do not necessarily appear on the Eligible Bridge List, they are funded with STP funds transferred from Highway Bridge Replacement and Rehabilitation apportionments. Voluntary seismic retrofit projects are also being funded with STP funds transferred from the HBRR apportionment. STP funds transferred from the HBRR apportionment reduces the local Federal match requirements.

PROJECT TYPE	FUND TYPE
1 Bridge Replacement	HBRR
2 Bridge Rehabilitation	HBRR
3 Low Water Crossings	HBRR
4 Bridge Painting	STP transferred from HBRR
5 Bridge Rail Replacement	STP transferred from HBRR
6 Voluntary Seismic Retrofit	STP transferred from HBRR
7 Special Bridge	STP transferred from HBRR

Deficient highway bridges eligible for replacement or rehabilitation may be over waterways, other topographical barriers, other highways, or railroads.

BRIDGE REPLACEMENT

Bridge replacement is defined as the total replacement of a structurally deficient or functionally obsolete highway bridge on any public road with a new facility constructed in the same general traffic corridor including a nominal amount of approach roadway to connect the new bridge to the existing roadway. Bridge replacement projects shall also have a SR below 50 and must be selected from bridges shown on the EBL.

BRIDGE REHABILITATION

Bridge rehabilitation is defined as the rehabilitation that is required to restore the structural integrity of a bridge on any public road as well as the rehabilitation work necessary to correct major safety (functional) defects. Bridge rehabilitation projects shall have an SR below 80 and must be selected from bridges shown on the EBL.

LOW WATER CROSSING

Location for this type of facility must include public road waterway crossings other than bridges where construction improvements have been made in the stream, river, or lake bed to provide a firm surface for vehicles to travel across the water course. The public road bridge must provide passage to traffic most of the year during periods of ordinary stream flows. Eligible Low Water Crossing projects may be located on any public road.

BRIDGE PAINTING

Bridge painting involves the removal and re-application of paint on a bridge with a designated Paint Code of 4 or 5 or equivalent. The bridge may be located on any public road.

BRIDGE RAIL REPLACEMENT

Bridge rail replacement is defined as the replacement of obsolete barrier rails on bridges with long life expectancy. Barrier rail replacement projects may also include the initial installation or replacement of bridge approach rails if needed. The bridge may be located on any public road.

VOLUNTARY SEISMIC RETROFIT

Voluntary Seismic Retrofit is defined as the seismic retrofit of bridges on any public road which do not qualify for the Mandated Seismic Safety Retrofit Program (see Chapter 7 "Seismic Safety Retrofit" of this manual). It has been determined by Caltrans that one lane, timber, or flat slab bridges are not eligible for Highway Bridge Replacement and Rehabilitation seismic retrofit funding.

SPECIAL BRIDGE

Any local agency which has no more than one over-extended HBRR project in the Caltrans' project status will be eligible to select a "special" non-eligible bridge from their inventory for replacement or rehabilitation. These bridge projects will be funded by HBRR funds transferred to the STP program, so they will not be required to meet Federal HBRR funding eligibility requirements. However, the local agency funding match will be 20 percent local/80 percent Federal. These bridge replacement or rehabilitation project candidates would need to have some special deficiency which is of extreme importance to the local agency but which is not adequate to make the bridge eligible for the desired HBRR funding.

6.4 PROJECT SELECTION PROCESS

The operating procedures may vary year to year. The HBRR Advisory Committee meets once a year to review the project programming and selection process. The HBRR Committee consists of two members from the Counties, two members from Cities, two members from Caltrans Structures Local Assistance and two members from OLP. The primary objective of this committee is to review any proposed changes and make recommendations to Caltrans in regards to the HBRR Program "Operating Procedures and Guidelines". The 1995-96 HBRR Program Operating Procedures and Guidelines and Procedures to initiate and implement a project are attached as Exhibit 6-B.

6.5 DESIGN CRITERIA

New bridges and upgrades to existing bridges must conform to the design standards established in Chapter 11 "Design Standards" of the *Local Assistance Procedures Manual.* If a deviation from the design standards is desired by the local agency, a Design Exception shall be processed by the local agency as outlined in Chapter 11 "Design Standards" of the *Local Assistance Procedures Manual.*

6.6 REFERENCES

Publication No. FHWA-PD-92-018
Recording and Coding Guide for the Structures Inventory and Appraisal of the Nations Bridges

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Structure Inventory and Appraisal Sheet

NATIONAL BRIDGE INVENTORY

****************IDENTIFICATION******************

(1) STATE NAME - _____ CODE _____
(8) STRUCTURE NUMBER # _____
(5) INVENTORY ROUTE (ON/UNDER) - _____ = _____
(2) STATE HIGHWAY DEPARTMENT DISTRICT _____
(3) COUNTY CODE _____ (4) PLACE CODE _____
(6) FEATURES INTERSECTED - _____
(7) FACILITY CARRIED - _____
(9) LOCATION - _____
(11) MILEPOINT - _____ _____
(16) LATITUDE _____ D ____' (17) LONGITUDE _____ D ____'
(98) BORDER BRIDGE STATE CODE _____ % SHARE _____%
(99) BORDER BRIDGE STRUCTURE NO. #_____

**********STRUCTURE TYPE AND MATERIAL******

(43) STRUCTURE TYPE MAIN: MATERIAL - _____
TYPE - _____ CODE _____
(44) STRUCTURE TYPE APPR: MATERIAL - _____
TYPE - _____ CODE _____
(45) NUMBER OF SPANS IN MAIN UNIT _____
(46) NUMBER OF APPROACH SPANS _____
(107) DECK STRUCTURE TYPE - _____ CODE _____
(108) WEARING SURFACE/PROTECTIVE SYSTEM:
A) TYPE OF WEARING SURFACE - _____CODE _____
B) TYPE OF MEMBRANE - _____CODE _____
C) TYPE OF DECK PROTECTION _____ CODE _____

****************AGE AND SERVICE*****************

(27) YEAR BUILT _____
(106) YEAR RECONSTRUCTION _____
(42) TYPE OF SERVICE:_____
UNDER -_____ CODE _____
(28) LANES: ON. _____ UNDER STRUCTURE _____
(29) AVERAGE DAILY TRAFFIC _____
(30) YEAR OF ADT 19_____ (109) TRUCK ADT _____%
(19) BYPASS, DETOUR LENGTH _____km

*************GEOMETRIC DATA***********************

(48) LENGTH OF MAXIMUM SPAN _____m
(49) STRUCTURE LENGTH _____m
(50) CURB/SIDEWALK LEFT _____m RIGHT _____m
(51) BRIDGE ROADWAY WIDTH CURB/CURB _____m
(52) DECK WIDTH OUT TO OUT _____m
(32) APPROACH RDWY WIDTH (W/SHOULDER) _____m
(33) BRIDGE MEDIAN - _____ CODE _____
(34) SKEW _____ DEG (35) STRUCTURE FLARED _____
(10) INVENT. RTE, MIN VERT CLEAR _____m/cm
(47) INVENT. RTE, TTL HORIZ. CLEAR _____m
(53) MIN VERT CLEAR OVER BRIDGE RDWY _____m/cm
(54) MIN VERT UNDERCLEAR REF - _____m/cm
(55) MIN LAT UNDERCLEAR RT REF - _____m
(56) MIN LAT UNDERCLEAR LT REF- _____m

***********NAVIGATION DATA**************

(38) NAVIGATION CONTROL - _____ CODE _____
(111) PIER PROTECTION - _____ CODE _____
(39) NAVIGATION VERT. CLEARANCE _____FT
(116) VERT-LIFT BRIDGE NAV MIN VERT CLEAR _____FT
(40) NAVIGATION HORIZ. CLEARANCE _____FT

STRUCTURE INVENTORY & APPRAISAL MM/DD/YY

****

SUFFICIENCY RATING = _____ . _____
STATUS = _____

**************CLASSIFICATION************ **CODE**

(112) NBIS BRIDGE LENGTH - _____ _____
(104) HIGHWAY SYSTEM - _____ _____
(26) FUNCTIONAL CLASS - _____ _____
(100) DEFENSE HIGHWAY - _____ _____
(101) PARALLEL STRUCTURE - _____ _____
(102) DIRECTION OF TRAFFIC - _____ _____
(103) TEMPORARY STRUCTURE - _____ _____
(110) DESIGNATED NATIONAL NETWORK - _____
(20) TOLL - _____ _____
(21) MAINTAIN - _____ _____
(22) OWNER - _____ _____
(37) HISTORICAL SIGNIFICANCE - _____ _____

**************CONDITION**************** **CODE**

(58) DECK _____
(59) SUPERSTRUCTURE _____
(60) SUBSTRUCTURE _____
(61) CHANNEL & CHANNEL PROTECTION _____
(62) CULVERTS _____

*******LOAD RATING AND POSTING******* **CODE**

(31) DESIGN LOAD - _____
(64) OPERATING RATING - _____ _____
(66) INVENTORY RATING - _____ _____
(70) BRIDGE POSTING - _____ _____
(41) STRUCTURE OPEN, POSTED OR CLOSED __
DESCRIPTION - _____ _____

******************APPRAISAL****************** **CODE**

(67) STRUCTURAL EVALUATION _____
(68) DECK GEOMETRY _____
(69) UNDERCLEARANCES, VERT. & HORIZ. _____
(71) WATERWAY ADEQUACY _____
(72) APPROACH ROADWAY ALIGNMENT _____
(36) TRAFFIC SAFETY FEATURES _____
(113) SCOUR CRITICAL BRIDGES _____

***************PROPOSED IMPROVEMENTS**************

(75) TYPE OF WORK - _____ _____
(76) LENGTH OF STRUCTURAL IMPROVEMENT _____m
(94) BRIDGE IMPROVEMENT COST $_____ , _____ , _000
(95) RDWY IMPROVEMENT COST $_____ , _____ , _000
(96) TOTAL PROJECT COST $_____, _____, _000
(97) YEAR OF IMPROV. COST ESTIMATE 19/20 ____
(114) FUTURE ADT _____
(115) YEAR OF FUTURE ADT 20 _____

********************INSPECTIONS*********************

(90) INSPECTION DATE _____ FREQUENCY ____MO
(92) CRITICAL FEATURE INSP.: (93) CFI DATE_____
A) FRACTURE CRIT. DETAIL ____ - ____ MO A) ____/
B) UNDERWATER INSP ____ - ____ MO B) ____/
C) OTHER SPECIAL INSP ____- ____ MO C) ____/

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1995-96 HBRR PROGRAM

OPERATING PROCEDURES AND GUIDELINES

These operating procedures and guidelines for the 1995-96 HBRR Program have been reviewed by the City/County/State HBRR Advisory Committee. These procedures are very similar to those procedures used for the 1994-95 HBRR Program. The program will be administered as follows:

1. Each local agency will be allowed two bridge Replacement projects and two miscellaneous projects. Each local agency will be allowed one or two bonus projects for selecting and replacing one or two projects with a Bridge Deficiency Rating (BDR) greater than 100. A local agency may also select one additional Bonus Replacement or Miscellaneous project in each six-month period (Oct-Mar & Apr-Sept) in which they have no over-extended projects. (Over-extended projects are those where it has been over three years since funds were reserved for construction or PE was obligated by an FNM-76 and construction funds have not been obligated.) An agency may elect to substitute up to two Seismic Retrofit projects for two of the allowed replacement projects.

   Miscellaneous projects are either rehabilitation, seismic retrofit, or painting projects.

   A Replacement Project shall be structurally deficient or functionally obsolete (SD/FO) **and** have a sufficiency rating (SR) below 50, and be selected from bridges shown on the attached list of Federally eligible bridges (EBL).

   A Rehabilitation Project shall be structurally deficient or functionally obsolete (SD/FO) **and** have a sufficiency rating (SR) below 80, and be selected from bridges shown on the attached SD/FO list.

   A Seismic Retrofit candidate may be any local agency bridge with seismic deficiencies except one-lane, timber, or flat-slab bridges.

   A Bridge Painting candidate may be any local agency steel bridge with a paint code of four or five or equivalent.

2. Bridge replacement project candidates must be selected from the ten most deficient bridges of an individual agency's inventory on the EBL. Bridges with an average daily traffic (ADT) less than 200 which do not have a legislative "Resolution of Need" as required by the California Transportation Commission (CTC) Resolution will not be considered one of the agency's ten most deficient bridges. Also "historically significant bridges" may be exempt from being considered part of an agency's ten most deficient bridges if so requested by the local agency. Bridges with a "Historical Significance Code" of four or five are not eligible for this exemption.

   3. The amount of eligible work will be determined on a project-by-project basis. All major deficiencies of a bridge must be addressed in any rehabilitation project. However, design exceptions may be approved by local agencies for some deficiencies when adequately justified. Any seismic upgrading work that is performed in conjunction with a rehabilitation project will be funded as part of the rehabilitation and not funded as a separate, concurrent seismic retrofit project. Any major structural deficiencies which cause a bridge to be posted must be corrected on any project. Steel sections which are seriously corroded must be repaired or replaced before cleaning and painting. Required repairs will be included in the participating items for project funding. The bridge must have enough useful service life remaining to justify the cost of the project. If structural repairs are a significant portion of the project costs, the project will be considered a rehabilitation

project. Cost comparisons will be required to demonstrate that rehabilitation is more cost effective than replacement.

4. Bridges selected as seismic retrofit candidates by the local agency will be reviewed to determine if they warrant further analysis. If warranted, Structures Local Assistance will field review the selected bridges with the local agency and recommend funding for preliminary engineering as indicated by the field review to the Office of Local Programs (OLP). Local agencies will be required to present their proposed retrofit design at a Caltrans Seismic Retrofit Strategy Meeting for concurrence that the design is necessary, effective and economical before proceeding with the final plans, specifications and estimates (PS&E).

5. Replacement and rehabilitation projects funded from the HBRR Program will have a match rate of 20.0 percent local agency, 80.0 percent Federal funds. Seismic retrofit projects and paint projects will be funded by HBRR funds transferred to the Federal Surface Transportation Program (STP) with an 11.47 percent local agency match. The maximum participating project cost for a paint project shall be $4.0 million.

6. The Low Water Crossing Program will continue for local agencies. Two million dollars will be available for Low Water Crossing projects this year. Projects on "on-system" or "off-system" routes are eligible. See the attached funding criteria for further details. Projects will be funded with a match rate of 20 percent local, 80 percent Federal funds. The deadline for submitting projects to HQ OLP through the District Local Assistance Engineer (DLAE) for consideration is February 1, 1996.

7. The Rail Replacement Program will also continue as last year with a total of $5.0 million authorized for the program. The funding criteria are attached and remain basically the same with the deadline for submitting applications to HQ OLP through the DLAE set at February 1, 1996. The funding will be through STP with a match of 88.53 percent Federal and 11.47 percent local.

8. The Special Bridge Program is approved for continuation during the 1995-96 fiscal year. Any local agency which has no more than one over-extended HBRR project in our project status will be eligible to select a "special" noneligible bridge from their inventory for replacement or rehabilitation. These bridge projects will be funded by HBRR funds transferred to the STP program, so they will not be required to meet Federal HBRR funding eligibility requirements. However, the local agency funding match will be 20 percent local/80 percent Federal. These bridge replacement or rehabilitation project candidates would need to have some special deficiency which is of extreme importance to the local agency but which is not adequate to make the bridge eligible for the desired HBRR funding. Detailed selection and funding criteria are attached.

9. Projects selected should be scheduled to have right of way certified and construction funds obligated within three years of their notification of reservation or approval of initial preliminary engineering (PE) obligation of funds, unless a specific extension is requested by the local agency and approved by OLP. OLP will consult with the HBRR Advisory Committee for input on these extensions as needed. Funding for projects in the 1995-96 Fiscal Year will be on a first-come, first-served basis.

   Federal participation for bridge approach roadway shall be limited to the minimum necessary to make the facility operable, but not to exceed 60 meters and 120 meters at each abutment for on- and off-system projects respectfully.

   Federal participation for PE costs on HBRR projects, except seismic retrofit, shall be limited to $75,000 or 25 percent of the estimated construction cost, whichever is greater.

Exceptions may be granted with prior written approval from OLP due to clearly identified, unusual environmental and/or hydraulic problems.

Any proposed HBRR project with an estimated construction cost in excess of $8.0 million must be reviewed and approved by OLP prior to obligating funds. OLP may consult with the HBRR Advisory Committee for input prior to approval of any project with a cost greater than $8.0 million. The contingency provisions for HBRR projects shall continue at five percent of the approved engineer's estimate with a minimum contingency of $5,000 per project.

The local agency must provide adequate staffing to administer the construction contract on all HBRR projects. Federal regulations in Section 635.105 of Title 23 CFR require the State Highway Agency to ensure that local agency administered projects receive adequate supervision and inspection. Where the local agency elects to use consultants for construction engineering services, the local agency shall provide a full-time employee to be the engineer in responsible charge of the project. The engineer in charge may be a retired annuitant or other experienced engineer on a full-time, limited-term appointment as a civil service employee of the local agency. The engineer in charge may be working on more than one project during the course of his/her employment. A consulting engineer with a long-term retainer contract to act as city engineer may be considered as an employee of the city. A city or county is allowed to perform engineering services for other cities and counties.

Local agencies will certify that they have complied with all Federal and State procedures upon completion of the project and will be monitored through process reviews conducted by the State.

HBRR Barrier Rail Replacement Program

Top priority is to replace obsolete barrier rail on bridges with long life expectancy. If the structure is structurally deficient or functionally obsolete, it should be upgraded under the present rehabilitation program when SR < 80, or replaced, in its entirety, if conditions and costs warrant.

Except for those eligible bridges which may be expected to remain in use for several years, do not replace barrier rails on structures which would remain below the American Association of State Highway Transportation Officials (AASHTO) minimum standards for bridges to remain in place. The involved work should require very little, if any, environmental or right of way work. Design exceptions or other funding sources should be used for complex approach rail sites. The standard design length for bridge approach guard rails is 19 meters.

Any barrier rail candidate must be identified on the Maintenance Report (SI&A) as (Code O) "Inspected feature does not meet currently acceptable standards."

The Barrier Rail Project will be funded under STP similar to the seismic and paint programs.

Barrier rail replacement candidates will be prioritized based on the following formula. Local agencies must submit applications for their barrier rail replacement candidates through the District Local Assistance Engineer to Headquarters Office of Local Programs' HBRR Program Manager before February 1, 1996. A priority list will be established within 30 days of this deadline. The application for funding must include all data necessary to complete the priority formula . Each local agency shall be entitled to up to two (2) barrier rail projects per year.

Description And Evaluation Of Priority Factors

Total Bridge Rail Priority Points = $F_1 + F_2 + F_3 + F_4 + F_5 + F_6 - F_7$

F_1: Bridge Rail Type - Among the noncurrent types of rails which are coded as 0 in the OSM&I database, some are considered to be less effective than others. Points are assigned as follows: (ten points maximum per project. If one side is good, project applies to bad side only. If project is for two sides with different points, use average.)

F_1 = 10 points: no bridge rail, or lightweight timber rails
F_1 = 6 points: lightweight concrete post or metal baluster, Tuthill, or equal
F_1 = 3 points: lightweight concrete window (Todd rail), unreinforced masonry, metal beam or lattice, or equal
F_1 = 0 points: all other rail types

F_2: Consequence of Penetration

F_2 = 6 points: bridges over an area of moderate or heavy public use (i.e., main road, street or railroad, playgrounds, parking lots, etc.).
F_2 = 0 points: otherwise

F_3: Inadequate Approach Rail System - Points are given for inadequate approach guardrails, the approach guardrail to bridge rail connections, and the approach guardrail terminals. (5 points maximum per project. If it varies, use average of rails to be replaced.)

F_3 = 1 point: inadequate approach guardrail transitions
F_3 = 3 points: inadequate approach guardrail
F_3 = 1 point: inadequate approach guardrail terminal
(Two-way bridges less than 18.3 meters wide should have an adequate approach guardrail system at all four corners)

F_4: Accidents - All accidents involving the bridge rail, bridge ends and approach guardrails in the last 5 years are counted. One point is given for each Property Damage Only (PDO) accident while 5 points are given for each fatal or injury accident.

F_4 = 5 points: x (fatal injury)
F_4 = 1 point: x (PDO)
(Total F_4 points will be the sum of both items.)
If doing only one side, use accidents involving the rail to be replaced.

F_5: AADT/Lane - This is a measure of the number of conflicts on the bridge. The most critical case is at a volume/capacity ratio of 0.50 (equivalent to 4,000 AADT/Lane, (Annual Average Daily Traffic/Lane) on 2-lane, 2-way roads and 8,000 AADT/Lane on multi-lane roads). Points are given as follows:

On 2-Lane, 2-Way roads:	**On Multi-Lane roads:**
F_5 = 0 points: less than or equal to 800	F_5 = 0 points: less than or equal to 1,600
F_5 = 1 point: between 800 and 1,600	F_5 = 1 points: between 1,600 and 3,200
F_5 = 2 points: between 1,600 and 2,400	F_5 = 2 points: between 3,200 and 4,800
F_5 = 3 points: between 2,400 and 3,200	F_5 = 3 points: between 4,800 and 6,400
F_5 = 4 points: between 3,200 and 4,000	F_5 = 4 points: between 6,400 and 8,000
F_5 = 5 points: greater than or equal to 4,000	F_5 = 5 points: greater than or equal to 8,000

F_6: Site Conditions - This rating factor is affected by many variables such as vertical alignment, horizontal alignment, bridge width, or access roads being close to the bridge.
For each variable that is slightly worse than the design standard, add 1/2 point.
For each variable that is significantly worse than the design standard, add 1 1/2 points.
The points for F_6 shall be as follows:

F_6 = 0 points: site conditions are excellent
F_6 = 1 point: site conditions are good
F_6 = 2 points: site conditions are fair
F_6 = 3 points: site conditions are average
F_6 = 4 points: site conditions are poor
F_6 = 5 points: site conditions are critical

The maximum number of points for F_6 on any bridge shall be 5.

F_7: Potential for future bridge replacement (reduction): Top priority is to replace obsolete barrier rails on bridges with long life expectancy.

F_7 = 10 points if BDR > 100
F_7 = 6 points if BDR > 90
F_7 = 3 points if BDR > 80
F_7 = 0 points if BDR < 80

HBRR PROGRAM

BRIDGES TO REPLACE

LOW-WATER CROSSINGS*

1) The program will be limited to $2.0 million per year. A maximum of $1 million may be expended at any one site. Expended funds will be deducted from the local share of the Federal HBRR fund.

2) Funds may be expended for "on-system" or "off-system" projects.

3) These projects will require the legislative body of the local agency to adopt a resolution which finds that the specific low-water crossing replacement project is more critical to the local economy and traffic service than any of the ten most deficient bridge replacement projects in their jurisdiction.

4) A Low-Water Crossing Replacement Project, if selected, will constitute one of the agency's HBRR replacement project for the year.

5) Candidates for funding must be submitted by the local agency through the District Local Assistance Engineer to the OLP HBRR Program Manager before February 1, 1996. A priority list will be established within 30 days of this deadline.

6) Eligible Bridge projects will be prioritized based on the following formula:

$$PIN = \frac{(ADT) \times (L) \times (C)}{1.61\ (E)}$$

ADT = Average Daily Traffic (must be documented)

L = Length, in kilometers, of most viable alternate routing of traffic when low level crossing is closed due to flooding.

C = Arithmetic mean number of days per year a public low water crossing site has been closed over the last five years.

E = Agency's requested amount of HBRR participation in thousands, limited to the maximum amount of $1 million (i.e., E is limited to 1,000). If the project is high enough on the priority list to receive funding, E becomes the amount of funds the agency will receive (i.e., if E = 750, and the project is high enough on the priority list, it will receive $750,000 of HBRR funds).

PIN= Priority Index Number
Higher Number = Higher Priority

7) The OLP will review this program each year to determine its need and validity.

*The definition of low-water crossing to be used for this program is:

Low-water crossings include public road waterway crossings other than bridges where construction improvements have been made in the stream, river or lake bed to provide a firm surface for vehicles to travel across the water course. They provide passage to traffic most of the year during periods of ordinary stream flow but are impassable to traffic during periods of high water.

HBRR PROGRAM SPECIAL BRIDGE PROJECTS

1. Local agencies will be limited to selecting one Special Bridge project per agency for the life of the Intermodal Surface Transportation Efficiency Act (ISTEA).

2. The special bridge projects will be funded by HBRR funds transferred to the STP program. Therefore, these projects are not required to appear on the Federal Eligible Bridge List (EBL).

3. The local agency funding match ratio will be 20 percent local, 80 percent Federal.

4. Special bridge project candidates are bridges which have "special" deficiencies which are of extreme importance to the local agency but are not eligible for the desired HBRR funding.

5. Therefore, these projects will require the legislative body of the local agency to adopt a resolution which finds that the specific special bridge project is a higher priority project than any of the ten most deficient bridge replacement candidates in their jurisdiction.

6. The candidates selected must be reviewed and approved by the District Local Assistance Engineer in consultation with FHWA.

7. The local agency must select a replacement candidate from their list of ten most deficient bridges, if they have any, prior to selecting their Special Bridge project candidate (in the same fiscal year).

8. A local agency will not be eligible to select a special bridge candidate if they have more than one over-extended HBRR project.

PROCEDURES TO INITIATE AND IMPLEMENT A PROJECT

1. Local agency, per HBRR guidelines, identifies their desired bridge projects and through the District Local Assistance Engineer (DLAE) informs the Headquarters Office of Local Programs (OLP) Area Engineer of their project selection.

2. If local agency wishes Structures Local Assistance (SLA) to participate in their field review, they should contact SLA directly. SLA will participate in the field review if requested to do so by the local agency and then only if staff resources are available.

3. After the field review, local agency submits a "Request for Authorization" form through the DLAE to the OLP Area Engineer. Copies of this request form will be transmitted by DLAE to SLA for information. This request form must be complete to the extent necessary to determine program compliance (scope, cost data, type selection and field review form, etc.).

4. If SLA has concerns/questions regarding the proposal (e.g., cost, type selection), SLA will contact the local agency directly in an attempt to resolve these questions/concerns. The results of that attempt will be submitted to OLP.

   If SLA does not provide comments to OLP within ten working days, OLP will assume SLA has no comment regarding the agency's request.

5. Issues that cannot be resolved by the OLP Area Engineer will be referred to the HBRR Program Manager in OLP, who will review the issue with SLA and make the final decision for the project.

6. OLP Area Engineer initiates FNM-76 and obligates the funds.

7. OLP Area Engineer through DLAE will notify local agency of "Authorization to Proceed" with Preliminary Engineering (PE) and funds reserved for subsequent phases (right of way [R/W], construction). Copies will be forwarded by OLP Area Engineer to SLA for information.

8. Local agency proceeds with PE.

9. SLA will not review local agency plans, specifications, and estimates (PS&E) unless requested by the local agency and then only if staff resources are available. Reviews will consist of a one-time cursory review with comments and/or recommendations provided. Local agencies will be responsible for the PS&E and SLA will not approve their submittals.

10. Local agency is responsible for submitting "Request for Authorization" through DLAE to OLP Area Engineers for subsequent phases of work (R/W, construction).

11. OLP Area Engineer through DLAE will notify local agency of "Authorization to Proceed" and funds programmed for subsequent phases (R/W, construction). Copies will be forwarded by OLP Area Engineer to SLA for information.

12. Where subsequent "Request for Authorization" or revised funding documents exceed funds previously programmed for project and/or limits established in the HBRR Guidelines, the OLP Area Engineers may send a copy to SLA for their comments and assistance in determining the appropriateness of the additional costs. This will normally occur only on complex projects.

13. Issues that cannot be resolved by the OLP Area Engineer will be referred to the HBRR Program Manager in OLP, who will review the issues and make the final decision for the project.